CARLTON CLUB.

LONDON AND DUBLIN COMMUNICATION.

RETURN to an ORDER of the Honourable The House of Commons,
dated 10 August 1842;—*for*,

COPY of any LETTER or COMMUNICATION addressed to the Lords of the Admiralty by *J. R. Ormsby Gore*, Esq. upon the subject of a Paper, entitled, "Replies to certain Accusations made against the Naval Commissioners appointed to inquire into the best Means of Communication between *London* and *Dublin*," appended to the REPORT of the Select Committee on POST-OFFICE COMMUNICATION, Printed on the 6th of August 1842.

Ordered, by The House of Commons, *to be Printed,* 10 *August* 1842.

J. R. Ormsby Gore, Esq. to the Lords of the Admiralty. 8 August 1842.

My Lords, Portland-place, 8 August 1842.

MY attention has been called to the Report of the Select Committee on Post-office Communication, which has just been published by order of the House of Commons; and more particularly to a Paper in the Appendix, entitled, "Replies to certain Accusations made against the Naval Commissioners appointed to inquire into the best Means of Communication between London and Dublin, by J. R. Ormsby Gore, esq. M. P. and others, in a Petition presented to the House of Commons, 1840."

The prominent use made of my name in this latter document induces me to offer a few observations for your Lordships' consideration.

In the first instance, I beg to remark that the petition in question was presented to me for signature, as the Member for Carnarvonshire, at the time it was prepared, and that I signed it, not simply because I believed the allegations contained in it to be correct, but because I knew that they conveyed the sentiments of a large and most respectable body of my constituents, including gentlemen of the very first rank and property, of all political parties in the county. I may be permitted to add, as evidence of the strong opinion entertained upon the subject in the very highest classes, that several Members of the House of Commons, struck by the conflicting nature of the official recommendations, by the unsafeness of the proposed railway over the Menai Bridge to Holyhead, and by the incapability of the harbour at Holyhead to accommodate large steamers, unless by an indefinite outlay of money, presented a petition to the House of Lords, praying for an inquiry into the circumstances in that House.

In the next place, I suppose I may assume that the passages in the petition—and they are numerous—to which no reply has been given, are correct; in which case, I venture to indulge a hope that they will not be lost upon your Lordships, particularly the unrefuted and uncontradicted passage which sets forth that the appointment of Captain Beechey, R. N. "was not consistent with impartiality, and that perfect fairness to all persons and interests concerned or affected, which ought to be inseparable from the proceedings of Government, acting on behalf of the Crown, upon a public question of the very greatest importance."

I am induced to lay the more stress upon this last circumstance, as I happened to be present at a meeting of noblemen and gentlemen, held at Earl Powis's house, 27th June 1839, at which the honourable Member for Anglesea, who, I perceive, moved for these Replies,* proposed that the Government should be requested to employ Captain Beechey upon

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* The replies of the Commissioners, it is to be remarked, *are not dated;* so that any one who reads them would naturally suppose they had been written in 1840, immediately after the publication of the petition they affect to answer. The fact, however, appears, on inquiring, to be, that they were not forwarded to the Admiralty until the 10th of March 1842, the day before they were moved for by Mr. Stanley, *and the day after* a deputation of Members of Parliament had been appointed to wait upon the Government on the subject of the London and Dublin communication.

It is also to be remembered, that although the petition in question was printed by The House for the use of Members and the public, at the instance of the petitioners, the replies were not made public until *after* the conclusion of the inquiry (that is to say, on the 6th instant), whereby the petitioners were deprived of the opportunity of a rejoinder *while the Committee was sitting.*

J. R. Ormsby Gore, Esq. to the Lords of the Admiralty. 8 August 1842.

upon this very survey; but it was agreed that such an employment would be improper, inasmuch as Captain Beechey's services had already been engaged upon the subject, and that be had given a report and opinions strongly favourable to the interests of an influential party deeply concerned in the issue of the inquiry.

Looking at the Report and Evidence just printed, I cannot, I confess, but regret that the opportunity has, for the present at least, been lost for entering into a full Parliamentary inquiry of the various points and suggestions that have been brought to bear upon the subject. I know not where we are to look for a more efficient tribunal than a Select Committee of either House of Parliament for testing the conflicting opinions that have been given, and weighing with judgment and discrimination the evidence by which the comparative merits of many of the views taken and the plans proposed are to be ascertained.

I regret this just now the more, because I understand deputations were in town to lay before the Committee much exact and valuable information which they had respectively deemed it advisable to collect. Perhaps, however, a feeling of delicacy prevented the Committee from pursuing the investigation to its full extent. They may have thought, that as some of the localities which must be considered to have a direct interest in the question were very unequally represented* upon the Committee, no conclusion to which that body could come would be deemed satisfactory by those who might have pleaded that the Members from their district had been excluded from the proceedings. If any such feeling has cut short the labours of the Committee, all parties interested will have cause to regret the circumstance; for the presumed defect might have been easily remedied, and no second opinion can be entertained as to the expediency of bringing to a speedy and satisfactory termination an inquiry which was protracted through a series of years, and which involves national interests of the first importance. And sure I am, that if the Committee had begun the inquiry with the London and Dublin communication, they would have seen that much of the labour they have undergone would have been unnecessary, as they must then have felt that by perfecting the main line of communication the necessity of improving the minor ones would no longer exist. These are principles specifically propounded as indisputable by the Committee, from which I may reasonably suppose that the long-expected results of these inquiries will soon begin to flow in upon us. I shall recapitulate a few of them, on account of their great value:

1. "So great a national benefit as the proposed improved communication between the two countries justifies any expenditure upon the part of Government that would be requisite for the purpose, and would also prove a measure of sound economy.

2. "A packet station should be constructed of a capacity to accommodate a class of steamers sufficiently large to ensure the greatest degree of expedition and certainty which is attainable in making the sea voyage at all seasons of the year.

3. "The importance of procuring, without delay, such further information as may be deemed necessary, in order to a satisfactory decision between the two ports of Holyhead and Port Dynllaen."

If the point here first put should be steadily kept in view during the course of the further investigation recommended by the third, and such investigation shall be conducted by competent and impartial persons, the result can hardly fail to prove as satisfactory as it is certainly desirable.

By that result we may rely on obtaining a harbour on the Welsh coast, which, in point of convenience and capability, shall correspond with Kingstown. Having gained this advantage, two others would be secured: 1st. Assuming 30 miles an hour to be the rate of speed which is now attainable on railways,† and 10 miles an hour as the speed of a good steamer, the

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* The following Analysis shows how unequally the interests of the different places concerned were represented upon the Committee:—

Bristol, Milford, and South of Ireland.	Donaghadee and North of Ireland.	London and Dublin.	*Viâ* Holyhead.	Coast Line, from Port Dynllaen by Carnarvon and Chester.	Inland Line, *viâ* Worcester.	Inland Line, *viâ* Shrewsbury.
Chairman. Mr. Miles. Mr. Read. Sir D. Norreys. Lord Emlyn. Mr. J. H. Vivian. Mr. O. Morgan. Capt. Berkeley. Mr. Murphy.	Mr. W. Johnson. Captain Dalrymple. Sir R. Ferguson. Mr. Corry. (Lord Newry was afterwards added.)	Mr. Shaw. (Mr. Grogan was afterwards added).	Mr. Stanley.	None.	None.	None.

It will be perceived, too, that the witnesses produced were in proportion with the Members of the Committee selected: thus, for the southern and northern communications no less than 36 persons were examined; for Holyhead Harbour and Railway, and *against* Port Dynllaen, a naval officer, Mr. Stephenson and Mr. Bidder, the engineers, also Mr. Cubitt, the engineer of the Orme's Head project. The engineers of the inland and coast lines from Port Dynllaen (namely, Messrs. Brunel, Vignolles, Rastrick, & Purdon), although in town, were *not* examined!

† "It may be estimated, even in the present state of railway practice, that 30 miles per hour may be obtained

J. R. Ormsby Gore, Esq. to the Lords of the Admiralty. 8 August 1842.

he saving of time that would be effected, in communicating with the following places by means of a harbour at Port Dynllaen, such as that described by the Committee, would stand thus:

London and Dublin.

	Hours.
By Liverpool - - - - -	23
By Port Dynllaen - - - -	14
Saving - - -	9

Liverpool and Dublin.

Present line of packets - - -	14
By Port Dynllaen - - - -	9
Saving - - -	5

London and Cork.

By Bristol, as recommended by Committee - - - - - -	37
By Port Dynllaen - - - -	21
Saving - - -	16

London and Waterford.

By Bristol and Cork - - -	41
By Port Dynllaen and Dublin -	18
Saving - - -	23

Liverpool and Belfast.

	Hours.
Present line of packets - - -	24
By Port Dynllaen - - - -	12
Saving - - -	12

Bristol and Cork.

Proposed line of packets - -	32
By London and Port Dynllaen -	25
Saving - - -	7

Bristol and Waterford.

By proposed line of packets - -	37
By London and Port Dynllaen -	18
Saving - - -	19

2dly. The saving of money to the Government would also be considerable, as the maintenance of the Holyhead, Liverpool, and Milford stations, by which, according to the Parliamentary Returns, 80,000 *l.* a year appears to have been lost, would no longer be required; and the one central harbour at Port Dynllaen, with its concentrated traffic, increased by the expedition and other facilities which the improved intercourse would be sure to produce, would become a source of gain, instead of loss, to the country.

3dly. If the proposed communication by Port Dynllaen was speedily carried into effect, the expense of building new harbours and steam-packets, for the purpose of expediting the Southern and Northern communications, as recommended by the Committee, would also be saved to the country. It is unnecessary to dwell upon the very heavy outlay of money involved in these latter propositions.

I now proceed with the "Replies" in their numerical order:

1. Two facts are relied on by the Commissioners to prove that there has been no deposit of mud at Holyhead; first, the finding, in 1831, some old tools not imbedded in sand, which had been lost in 1817; and, secondly, that no dredging has been necessary since 1834.

The Petioners observed, that the statement, as to the finding of the tools, "must have been adopted from hearsay." The Commissioners answer flatly that the statement was *not* adopted from hearsay. The only conclusion to which this contradiction leads is, that the Commissioners were themselves *evidence* of the truth of their assertion; but it seems, after all, and upon their own showing, that the petitioners were right, for the particulars were obtained in no other way than this: "The Commissioners in 1840 *heard* the statement from men who had been at work in 1831." The result of the personal examination, which, as it now appears, *afterwards* took place, would have been more satisfactory if the precise date of the examination had been given. Perhaps, however, all difference of opinion upon this point may be set aside as irrelevant to the principal matter at issue, when it is considered that the spot at which the tools were found is *outside* the harbour (*v.* Report of 1840, p. 40).

The assertion that there has been no deposit since 1834 which required dredging, I am unable to reconcile with the following items in the Miscellaneous Estimates: "For the year ending 1842, Holyhead Harbour, p. 10, *Dredging packet berths*, 928 *l.*" "For the year ending 1843, Holyhead Harbour, p. 9, *Dredging packet berths*, 570 *l.*"

On looking over the different Reports on Holyhead Harbour for some years past, so many passages will be found bearing upon this question, that I think it best to copy them out for

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obtained should great and paramount interests demand the application of the force and exertion requisite for that purpose.

"It is presumed to be entirely a question of expense; and the difference of expense must be great indeed to counterbalance the advantages which would arise *from the gain of a single hour in the correspondence between London and all parts of Ireland.*"—*Irish Railway Commissioners' Second Report*, p. 73.

for your Lordship's perusal. Holyhead Harbour, it will be remembered, was only finished in 1828. In Mr. Telford's Report, dated 28th March 1829, the following passage occurs:
1829. "For a considerable space within the pier head at the packet berths there are from 8 to 10 feet of water; *besides which*, there is from two to three feet of *soft mud*, which should be removed, so as to have 11 feet at low water."

1831. The Miscellaneous Estimates for 1831 contain this charge: "*For continuing* the use of the dredging machines for the purpose of clearing and deepening *the Holyhead packet berths*, and replacing by means of diving-bells, large stones, &c. 1,651*l.* 18*s.*" And in Mr. Telford's Report, 15th May 1832, is the following: "The mud dredging at the packet berths
1832. of the north pier was in operation for about five months."

1833. "To 29th June 1833; 10,282 cubic yards of mud have been removed from *the packet berths*, by means of dredging, at an expense of 795*l.*"—*Telford's Report*, 5th August 1833.

1834. "From 29th June 1833 to 28th June 1834, there have been 3,993 cubic yards of mud and stones *dredged out of the packet berths*, at an expense of 432*l.*"—*Telford's Report*, 9th August 1834.

1835. "The dredging of the packet berths mentioned in Mr. Telford's last Report was discontinued in October last, there being then a space cleared to the depth of 11 feet below low-water spring tides, extending for a distance of 300 feet, and 250 feet in breadth."—*Mr. John Provis's** *Report*, 13th April 1835.

1836 & 1837. "The diving-bell is engaged in cutting down rocks in *the packet berths*."—*Mr. John Provis's Report*, 9th May 1837.

1838. "My last Report mentioned that the diving-bell was then engaged in cutting down some rocks *within the packet berths*. This work was continued until the latter end of December last, at which time about four-fifths of the quantity intended to be cut away had been removed."—*Mr. John Provis's Report*, 28th April 1838.

1839. "The lowering of the rock in *the packet berths* was last year completed, and the diving-bell is now employed near the west end of the pier."—*Mr. John Provis's Report*, 30th April 1839.

1840. "The rock near the west end of the north pier (*the packet berths*) on which the diving-bell was employed at the time of writing my last Report has been cut down as far as was deemed necessary below the bottom of the harbour."—*Mr. John Provis's Report*, 15th May 1840.

In concluding these extracts, it is scarcely necessary for me to point out that the deposit of mud would necessarily be kept under while the rock was being cut away, inasmuch as in removing the rock the mud would also be removed. No sooner, however, is the diving-bell disused, and the cutting away of the rock stopped, than the dredging machine is again
1842. required; and thus we have the charges in the Estimates for 1842 and 1843, which I have already quoted, to the amount of 1,496 *l.*

With respect to the natural cause of the silt or deposit in Holyhead Harbour, the Commissioners appear to have been strangely ignorant. They boast, at page 39 of their Report, of the "absence of rivers at Holyhead and its vicinity." I find, however, in Rennie's Plan of the Harbour of Holyhead, ordered to be printed by the House of Commons in 1810, and reprinted by the Lords, July 25th, 1822, the course of the "*Avon Tripp*" laid down from the road to Gwindu, across the harbour, to a point near Parry's Island, where it joins the sea, and then passes through the harbour. The same river is distinctly traced both in the chart by Lieutenant Thomas in 1816 and that by Lieutenant Sheringham in 1837. It will be found; I dare say, upon a more strict investigation of all the circumstances than the Commissioners have yet bestowed upon them, that however the Avon Tripp may, like most Welsh rivers, appear to be an insignificant streamlet in summer, it contains in winter a wild and impetuous body of water, quite sufficient to account for such a deposit of silt as fully justified Mr. Harbour-master Evans's remark in 1832, that it will render the use of the dredging machine "a circumstance of continual occurrence."

2. This answer virtually admits the correctness of the accusation. The petitioners had denied that the cliffs at Port Dynllaen are "loose sand," which the Commissioners had described them to be. The Commissioners do not venture to repeat that description, from which I infer that they find it is at variance with the fact.

3. The Commissioners deny the petitioners' statement that the Menai is 20 miles from Port Dynllaen, asserting that the *entrance* to the Strait "is exactly 11 miles." I have ascertained with a pair of compasses the real distance between Port Dynllaen and the Menai to be 11 miles. So that if the petitioners were mistaken, so were the Commissioners. Be the distance, however, what it may, I apprehend that as the current from the Menai is at ebb tide *along the Anglesea coast to Holyhead*, no deposit of silt could possibly be made by it in Port Dynllaen, *which lies in the contrary direction*.

With regard to the next paragraph, I cannot perceive "that the whole of the bay generally has filled up from eight to twelve feet during the above-mentioned period." What I learn from my inquiries is, that Mackenzie's Map, made by order of the Admiralty in 1776, confirms Morris's Map of 1737; that Rogers's Map in 1808, Owen's in 1835, and Captain

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* The Commissioners in a note have referred to Mr. Provis and Captain Evans as authority to corroborate their assertion that there has been no dredging in Holyhead since 1834. It appears strange that so public an operation as dredging should have been carried on every year for nearly "five months," without the knowledge of the engineer or the harbour-master, and of Captain Beechey himself, who, it appears made Holyhead his head-quarters while conducting the survey of St. George's Channel.

J. R. Ormsby Gore, Esq. to the Lords of the Admiralty. 8 August 1842.

Captain John Smith's, published in Liverpool in 1836, all agree with Morris; and that in one particular spot there is a difference of about two feet between Lieutenant Sheringham's Map of 1837 and these various authorities. Such an extent of difference, however, is not, as I am informed, more than practical men are prepared to expect in this sea, where "southerly winds," according to Captain Huddart, "augment the tides at high water, and keep them up at low water; while northerly winds equally depress them." So at Belfast, "the tides" (reports Captain Beechey*) "are much affected by winds, and in the spring and autumn have fallen one foot three inches below the usual standard." This spot, however, is in the middle of the Sound, where a deposit is not likely to have taken place. In corroboration of this evidence, it is proper to state that the petitioners, in their petition to the House of Lords in 1840, stated, that "persons well acquainted with the locality, and competent to speak to a question of the kind, avow their readiness to come forward and prove that Port Dynllaen harbour is deeper now by from 18 inches to two feet, than it was 40 years ago." One thing I take to be clear, and that is, that although Captain Beechey was twice at Port Dynllaen, he did not survey or sound it, so as to enable him to speak, *of his own knowledge* upon these details. When a similar question was raised on a previous occasion, Captain Beechey did not omit, as in the present instance, to perform his obvious duty, which was to ascertain the fact by the simple process of boring. Thus, in his Report on the Northern Communication, appended to the Report of the Select Committee on Post Office Communication above referred to, I find the following sentence: "The ground was tried, moreover, by one of the African's boats, by forcing a tube several feet into the ground, and examining the soil brought up, which was stiff clay, with a superstratum of shingle and stone." Now, had Captain Beechey deemed it advisable, for the support of his views, to have adopted the like test at Port Dynllaen, the result (as Lieutenant Sheringham's Report and Plan show) would doubtless have been the same.

So far, at all events, the case of the petitioners appears to be strongly confirmed; for it is impossible to read their petition, however cursorily, without perceiving that the great cause of complaint with them was, "that assertions and representations as to the state and capabilities of Port Dynllneu had been put forward without due examination of the place, or deliberate reflection and judgment." I must add, there is one simple and satisfactory course by which the question of filling up or not filling up of this bay is to be completely set at rest, provided the documentary evidence referred to should not be deemed conclusive, and that is by a new survey. Lieutenant Sheringham's survey was made seven years ago; let another survey be now made by competent and disinterested persons, and a comparison of the two results will decide the question. This I take to be the more called for, inasmuch as Captain Beechey's soundings in parts of the Harbour and Bay of Holyhead, and those of Lieutenant Sheringham, differ to the extent of seven feet. I mean that Captain Beechey makes the depth of the *outer* harbour and bay *greater*, by seven feet, than Lieutenant Sheringham; while the soundings given in Telford's plan of the *inner* harbour, dated June 25, 1828, and Sheringham's chart of 1837, show a greater depth of water, generally, by three feet, than Captain Beechey gives. If Captain Beechey be right in this latter respect, and Telford and Sheringham were right also, there must have been a filling up at Holyhead, to the extent of the difference indicated. If again, Captain Beechey's soundings are to be depended upon, it is vain to think of improving the harbour by elongating the present pier; because, in that very direction where Lieutenant Sheringham gives a depth of from 12 to 16 feet of water, Captain Beechey gives a depth varying from as low as two to 15 feet, or an average of 7½ feet.† In the letter of James Perry, esq., appended to the Report of the Select Committee, your Lordships will find some pertinent observations in respect to the proposed inner harbour, as well as extracts from the reports of the highest authority, to show that the inner harbour, patch it how you may, would never be adequate to the wants of the public service. I append (*see* Appendix (B.), a copy of Mr. Perry's letter, for the facility of reference.

4. The Commissioners say, they meant to imply "that the proposed breakwater at Port Dynllaen would increase the current through the anchorage, rather than obstruct it, which would greatly inconvenience the harbour." Is not this at variance with Lieutenant Sheringham's opinion? who has observed, "With such protection I have no doubt that vessels lying alongside of the quay *would invariably be in smooth water*, as there would be no backwater or scouring action of the tide, except through the Sound, to seaward, *which would be favourable*, there is reason to conclude that the quays would be constantly kept clear from silt or deposit—*a consideration of great weight in the formation of a harbour.*"

5. In examining the statements of the petitioners, we are to bear in mind that two plans have been recommended for adoption: the one, to make a packet station only at Port Dynllaen, by running out a pier to Carrig-y-Chwislan; the other, to make a packet station and refuge harbour also, in which case a breakwater was proposed. For the pier, nothing so easy as to knock off the stone from the cliff, and tumble it into the sea; for the breakwater, the expression used by the petitioners, that "the expense of the stone would be the lowest it is possible to conceive," will not be deemed exaggerated by those who will take the trouble

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[*] See his Report on the Communication between Scotland and the North of Ireland, appended to the Report of the Select Committee.

[†] This circumstance, perhaps, may explain why Captain Beechey has thought proper to adopt the soundings shown on Commander Sheringham's chart of Holyhead Bay in his recent plan of an *inner* harbour, and why those marked on his own chart should have been adopted in the Commissioners' plan of an *outer* harbour at Holyhead.

J. R. Ormsby Gore, Esq. to the Lords of the Admiralty. 8 August 1842.

trouble to estimate what the cost would be of conveying the stone on a raft a distance of 400 yards, which is about what would be required.

As to the cost of the stone, I uphold all that the petitioners aver. The distance from which stone would have to be water-borne to Holyhead would exceed 20 miles instead of 400 yards, which at Port Dynllaen, the Commissioners say, "would raise the price of the stone to a considerable amount, on account of the difficulty of bringing vessels to the spot, and the numerous delays consequent on bad weather." If Mr. Provis's Reports, made during the progress of the works at the Menai Bridge,* (for which not a fortieth part of the stone was required that would be necessary to form an outer harbour at Holyhead) be consulted, not a doubt can be entertained that the observations made by the Commissioners would be much more pertinent if applied to Holyhead than to Port Dynllaen. I append some extracts from Mr. Provis, in order that the numerous delays and formidable nature of the resistance which the locality presents to the construction of works at Holyhead may be fully understood.—*See* Appendix (A.)

6. The Commissioners persist in maintaining that there is no room at Port Dynllaen for suitable buildings. I cannot pretend to fix the extent of accommodation Captain Beechey may deem necessary for a packet station; but all the published charts of Port Dynllaen show that the beach is built upon. And I also would observe, that the plan laid before Parliament in 1807, with Mr. Rogers's map already referred to, gave an area of 1,000 feet diameter for a new town, and a space for warehouses 1,000 feet in length. Moreover, walling out the sea on the coast, in three or four feet of water, is not a very difficult or expensive process. But whether there is or is not room at Port Dynllaen for the works alluded to seems to me a matter quite beside the present question, because a most convenient and every way unexceptionable site has been indicated by the Revenue Commissioners, in their Twenty-second Report, 1830, where they name Kingstown as the proper place for a general establishment for the repair of packets, as being equally available for Liverpool steamers as well as those belonging to other ports; and in this opinion I have reason to believe that the public in general coincide.

7. The opinion that the Commissioners were inconsistent in recommending a harbour which, when improved upon their plan, would still be inadequate, may, I think, be fairly maintained; but, as several material grounds for such opinion bear upon another part of the paper, I reserve them for the present.

8. The Commissioners were accused of excluding rocks, which ought to have been specified. They reply that a particular rock was on their map; but that map, though referred to as accompanying the Report, was not printed with it. It was, therefore, doubly incumbent upon the Commissioners to notice these rocks specifically, one being within 200 yards of the entrance, and the other in the centre of the proposed harbour. Then, as to the depth of water, the petitioners ascertained from other sources, sufficiently accurate, that in the mouth of the harbour, which the Commissioners proposed to construct, there would be but 19† feet water; if it were further extended, it must go into 16 feet water, and such being the case it was natural to infer, that whatever depth the interior might *now* give, it must in process of time be diminished to the same depth as that of the mouth, because an accumulation of silt within that mouth would become inevitable. Every tide would leave behind it much of its usual accompaniment, sand and mud. From this observation it will be perceived that Holyhead reverses the usual construction of harbours, which extend from shallow water at shore into deep water at sea; whereas what the Commissioners recommended is a harbour deep in shore, but growing more shallow as it proceeds seawards.

9. I attach considerable importance to this head of accusation, and the answer given to it. The accusation is, that the Commissioners drew up an incorrect diagram for the purpose of showing that an error of one point in the course would involve danger on the Port Dynllaen and not on the Holyhead passage. The judgment to be formed by an impartial reviewer of the different circumstances bearing upon it, will almost suffice to decide the question of how far the Report of the Commissioners is correct, and consequently how far it will be prudent or advantageous to act upon their recommendation.

Much of the trouble the Commissioners have taken for the purpose of detecting inaccuracies in, and throwing discredit upon, Mr. Laurie's map, is irrelevant. Whether that be a good map or not, the petitioners are not to be blamed for it; it was not their work. They sought for the *best map*, were referred to one by Laurie; and *finding it supplied to the navy by the Admiralty, they conceived themselves warranted in treating it as an accurate demi-official production.* It may, nevertheless, as I have said, be inaccurate; if so, it must hold rank with the first diagram produced by the Commissioners; for every one who will take the trouble to compare the first with the second or amended diagram, will easily perceive that the two are at variance, and consequently, that if the one be right, the other must be wrong. Still more remarkable is it, that, even if we set aside the accuracy of Laurie's map

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* The stone in the vicinity of the Menai Bridge is of the schist formation, like that of Holyhead; consequently all the material for the piers had to be water-borne from the limestone quarries near Beaumaris.

† I perceive that Captain Claxton, R. N., in his Report to the Trustees of Swansea Harbour, appended to the Report of the Select Committee, remarks, "The average draught of a Bristol West Indiaman is about 14½ feet of water. Nautical men know that in an open roadstead, nine feet of water, at least, more than a ship draws, is a *sine quâ non*." It is quite clear, therefore, that the *entrance* of an outer harbour at Holyhead should be considerably more than 19 feet deep. According to Commander Sheringham's Report, "a heavy sea would reach the mouth of the proposed harbour in rough weather."

J. R. Ormsby Gore, Esq. to the Lords of the Admiralty. 8 August 1842.

map altogether, the petitioners were perfectly warranted in complaining "that Sir James Gordon and Captain Beechey had taken the trouble to draw out and publish an incorrect diagram." This admits of direct and palpable demonstration. The petitioners showed that the diagram referred to in page 42 of the Report did not agree with Lauris. The Commissioners scout Laurie, and produce, as the last and best authority, Lieutenant Frazer. And what does Lieutenant Frazer show? That the banks in question *were incorrectly* represented on the first diagram, and that the effect of an accidental *error of one point in the course* from Holyhead, would be to throw a vessel *upon the Bray Banks*, instead of a considerable distance from them, as was made to appear by their first diagram.

I have further to point out, as to the locality of the Kish Bank, that even adopting Lieutenant Frazer and rejecting Mr. Laurie, there was an undue elongation of, or misplacing of the Kish Bank in the first diagram, to the manifest injury of the Port Dynllaen passage. This is palpable upon the face of the amended diagram, which colours the banks differently as they are differently placed by various authorities.

It will be seen, moreover, that the diagram does not agree with Lieutenant Frazer's map, which I annex, for not only the Kish Bank, but also the Kish Light is unduly placed upon the diagram compared with Lieutenant Frazer. The light, according to the map, is three quarters of a mile from the bank; but, according to the diagram, close upon it. The light, moreover, is a mile and a half in advance of Kingstown, on the map; but on the diagram it is immediately opposite. The effect of these errors is serious; the straight line from Holyhead is there made to pass by the Kish Bank, instead of going upon it, as Harbour-master Evans and Captain Skinner stated it does, in their evidence before the Commons' Committee of 1832; and the line from Port Dynllaen is thrown upon the Codling Bank instead of being clear of it, as I contend it really is, if the banks be truly placed. In the same case, moreover, the Holyhead, instead of the Port Dynllaen passage, would be thrown upon the Codling Bank.

The argument founded upon this diagram by the Commissioners was hypothetical, and it made a difference of three miles between the two passages; as to which I contend that the real difference is not more than two miles; because, as I shall presently show, there must be a circuit to escape the banks in the Holyhead passage. I cannot but add, that the weight which the Commissioners labour to attach to this matter seems to me quite unreasonable. Their presumption is, that a *steam vessel* may go 10 miles wrong in her course. This I call a new and far-fetched idea, and one more likely to be laughed at than feared by practical men. One thing at least is certain, namely, that in all cases of this kind we should be especially careful to proceed upon exact premises. How difficult it is to do so may be perceived by a glance at this very diagram, which shows a marked disagreement between all the three authorities referred to, namely, the Ballast Board Map, Mr. Laurie's and Lieutenant Frazer's. In none of these are the same banks put down in exactly the same places.

10. The reason assigned by the Commissioners for omitting Burford Bank, lying in the Holyhead course, I cannot accept as satisfactory. I have shown that it does bear upon the supposition for the elucidation of which the diagram was prepared; and I have further to remark upon the assertion that it is not dangerous except in gales, that there are not 13 feet of water upon it, while the vessels required for the improved communication between London and Dublin will draw from 14 to 16 feet of water. My authority for saying that the Burford Bank has not 13 feet of water, is, "Sailing Directions," &c., "by William Mudge and George Alexander Frazer, Commanders R. N.," &c. &c., "printed for the Hydrographic Office, Admiralty, 1842." Burford Bank was therefore a proper subject for comment upon the part of the petitioners, because it should, in fairness, have been noticed in the map; being unquestionably an obstacle in the way of a vessel drawing, as I contend those required should do, from 14 to 16 feet of water.

11. The differences between the Commissioners and the petitioners as to the question of increased distances, founded upon the tables in the Report, is something more than "a matter of opinion." The way in which the Commissioners attempt to make the alleged increased distance out, shows a disposition to strain the evidence by dragging in varying and casual circumstances as fixed and positive producing causes; thus more than one-half of the assumed increase is attributed to *occasional* ebb-tides, and a necessity superinduced when the weather happens to be bad.

12. If the Commissioners had not the means of showing the other side of the case, a sense of propriety ought to have restrained them from giving one-sided evidence. I can only observe, that the question being purely nautical, pains have been taken to ascertain the sentiments of officers, who, independent of their character for general ability, intelligence, and integrity, are from a practical experience of many years, thoroughly acquainted with, and therefore most competent to speak of St. George's and the Irish Channels. From such gentlemen (who, moreover, have the additional recommendation of not being actuated by any possible interest or personal feeling whatever upon the question,) I gather that if the ebb-tide retarded the Port Dynllaen passage occasionally five miles, it would at the same time retard the Holyhead Passage *"two miles."* The flood-tide would increase the Holyhead passage over the Port Dynllaen to a much greater extent than the latter line would lose on the ebb. There would thus probably be occasioned a loss of from five to seven miles on the Holyhead passage.*

When

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* To this we are bound to add the Race, so lightly regarded by the Commissioners, of which the following description, furnished by Captain Evans, is given in the New Piloting Directory:—

"Those

J. R. Ormsby Gore, Esq. to the Lords of the Admiralty. 8 August 1842.

When the Holyhead packets had to contend with the prevalent south-west winds, they would be unable to carry sail, and would be retarded in proportion to the strength of the wind. They would prove, on the average, as much as two knots an hour, while Port Dynllaen vessels, from carrying sail, would not only maintain their average speed, but accelerate it half a knot. Looking at the question in this point of view, the following computation will be found to deserve particular attention:

	Miles.	Miles.
Holyhead:		
Distance to Kingstown - - - - - - - - - -	60	
Increased by ebb-tide, and rounding the Kish - - - -	3	
By contending against Race* - - - - - - - - -	6	
Ditto - - - - prevailing winds, when blowing fresh, two knots	16	
Ditto - - - - flood-tide - - - - - - - -	6	
		91
Port Dynllaen:		
Distance to Kingstown - - - - - - - - - -	67	
Increased by ebb-tide - - - - - - - - - -	5	
Rounding Kish, occasionally † - - - - - - - -	2	
	74	
Deduct acceleration of speed in prevailing winds, when blowing fresh, say half a knot - - - - - -	4	70
Difference in favour of Port Dynllaen - - - - - - -		21

13. Under existing circumstances, I decline to accept as positive proof any map or chart put forward by the Commissioners as their own performance, in their own defence; and I shall presently show that the chart in question is defective and incorrect in other respects.

14. I cannot refrain from an expression of the surprise I feel at finding the Commissioners persevering in the opinion that the prevailing wind is not more favourable to one route than the other. The allegations of the petitioners, and the authorities quoted by them upon the subject, are not refuted. One statement was, that by the registers of the harbour-master of Kingstown it appeared that for the last three years the prevailing wind was south-west for eight months and one week in the year. To this the Commissioners reply, "that registers of wind kept at Holyhead or Kingstown, or at any place under the influence of high wind, can give but an imperfect idea of the wind of the Channel!" It unluckily happens, however, for the Commissioners, that the return of the harbour-master of Kingstown stands confirmed by Captain Beechey himself, who, in his Report on the Harbours of Donaghadee and Portpatrick, appended to the Report on Post-office Communication just printed, stated, "the prevailing winds blow *at least* eight months out of the year. *They are frequently very violent, and always occasion a heavy sea.*" The Commissioners have given partial tables from the logs of the Urgent, Otter, and Doterel, to show that there is no material difference between the average passages made by those vessels in certain periods, and consequently that the effect of the prevailing wind has been over-rated. But there is other evidence, with which the Commissioners ought to have been acquainted, which proves that the side passage *does* produce considerable difference. I quote as an instance from the Appendix to the Twenty-second Report of the Commissioners of Revenue Inquiry, p. 175, first observing

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"Those who have experienced eddies of this description can alone appreciate their overwhelming powers. Of this now under consideration, it is asserted that it once swallowed up a brig, which by some luckless chance became entangled in the vortex; after a brief struggle, she yielded to her fate, foundering in a sea of foam, before the eyes of a spectator on the heights. It may be feared, indeed, that feats of this appalling nature are not unfrequent in the long dark nights of winter, as scarcely a year passes without the melancholy sight of broken spars and lacerated rigging from time to time thrown up from its fretful cauldron. It is stated by Captain Evans, the harbour-master of Holyhead, that previous to the exhibition of the light on the South Stack, scarcely a winter passed in which the fisherman and neighbouring peasantry have not fallen in with floating fragments, or various articles of merchandise, belonging to vessels which had gone down in the Race, unseen, unpitied, and unaccounted for. The dead set of the currents up Channel was long ago verified by the circumstance of several butts of sherry being drifted on shore, on various parts of this coast, which were ascertained to have been part of the cargo of a ship wrecked off the Scilly Islands about a fortnight before. Many other anecdotes have been related, which confirm the danger of this indraught."

"*Here, therefore, the mariner should be peculiarly on his guard against the effect of conflicting streams, constantly using his lead and keeping a good look out, so necessary in every case to his vessel's safety.*"

* Captain Goddard, in his Report to Sir F. Freeling, April 26th, 1824, stated that although Holyhead was half-way between Liverpool and Howth, the passage from Holyhead to Howth would be an hour longer than the first part of the voyage, i. e. from Holyhead to Liverpool, "*as the strong stream of flood-tide off the Head*, which runs to the E. N. E., *has been found to lengthen a steamer's passage fully one hour.*"

† Port Dynllaen would have another most important advantage over Holyhead, as on nearing the Irish land under strong westerly winds, the water becomes smoother, so that the last 10 or 15 miles may be made with greater speed by a steam-vessel than any part of the previous distance. In reference to this feature of the case, the Irish Railway Commissioners observe, at page 76 of their Report: "Kingstown, as before remarked, *is in a more favourable direction* for Port Dynllaen *with regard to the prevailing wind, and the last* 10 *miles would, during adverse winds, (when alone the shorter voyage would be of any great consequence) be much under shelter of the wind.*"

J. R. Ormsby Gore, Esq. to the Lords of the Admiralty.
8 August 1842.

observing that Howth is only half a point to windward, whereas Port Dynllaen to Kingstown would be two points:

" A Statement showing the Number of Passages that can be made in the course of One Year by Her Majesty's Packets from Holyhead to Howth, and from Holyhead to Kingstown, within the Number of Hours and Minutes stated underneath; the Calculation made from Passages actually performed in 273 days subsequent to the 1st October 1826.

From Holyhead to Howth:

	H. M. 6. 0	H. M. 6. 15	H. M. 6. 30	H. M. 6. 45	H. M. 7. 0
Number of times - -	20	46	101	137	180

From Holyhead to Kingstown:

	H. M. 6. 0	H. M. 6. 15	H. M. 6. 30	H. M. 6. 45	H. M. 7. 0
Number of times - -	None	11	45	89	131"

Coupling this Report of Sir E. S. Lees with the specific testimony of the hydrographer to the Admiralty (an authority universally respected, because caution and judgment invariably mark his opinions), who has said upon this point, " The Port Dynllaen courses would be W.N.W. and E.S.E., so that the most prevalent wind (south-west) must be a side wind both ways, an advantageous circumstance to steamers, as it enables them to steady themselves by canvass." I add, moreover, the corresponding opinions of Captain Skinner, Captain Evans, and Lieutenant Browne; and further, the reluctant admission, at page 48 of the Report, that " the flood-tide and prevailing wind *would* give advantage to Port Dynllaen." I cannot resist the impression strongly produced upon my mind, that a different conclusion should have been arrived at by the Commissioners.

There is nothing to be inferred from the average passages referred to by the Commissioners, as having been made in *particular* periods and by *particular* vessels, which is not more than *countervailed* by other evidence directly in point. What, for instance, is shown by the Return moved for by the Hon. Mr. Stanley, of the number of hours occupied by the packets in their passages between Holyhead and Kingstown, from 1st January 1841 to 1st January 1842? A marked difference between the voyages to and from Kingstown. Is not that, confirming as it does the table already quoted from the Report of Sir E. Lees, a decisive proof of the effect of the prevailing wind? The details deserve the closest attention, and they are as follow:—

Number of voyages	under 6 hours -	to Kingstown - -	5
—	under 6 hours -	from Kingstown - -	38
—	above 7 hours -	to Kingstown - -	146
—	above 7 hours -	from Kingstown - -	60
—	above 8 hours -	to Kingstown - -	74
—	above 8 hours -	from Kingstown - -	20
—	above 9 hours -	to Kingstown - -	41
—	above 9 hours -	from Kingstown - -	11
—	above 10 hours -	to Kingstown - -	27
—	above 10 hours -	from Kingstown - -	8

The document from which these results have been obtained was public, and ought to have been known to the Commissioners. It completely negatives their conclusion that there is a difference of only *seven minutes* between the voyage out and in between Holyhead and Kingstown, and it leads to the suspicion that if the evidence on their side has not been very partially selected, it has, at least, been produced in a very careless and superficial manner.

15. The charge, I admit, is a grave one: it accuses Captain Beechey of having found a rock not known to exist before at Holyhead, and suppressing all notice of it in the Report of the Commissioners. In the Replies a letter is given, in which Captain Beechey claims the discovery of a rock, which will endanger large vessels passing close to the Skerries at low water. But this was not the Captain's only discovery, though the Report and the " Replies" would lead to the contrary inference. The following passage is taken from the Nautical Magazine for November 1840, page 815.

" THE STAG ROCK, HOLYHEAD.—This dangerous rock, which has so long eluded the vigilance not only of those persons best acquainted with Holyhead, but also our naval surveyors, has at length been discovered by the indefatigable exertions of Captain Beechey, employed surveying St. George's Channel. In his report to the hydrographer, Captain Beechey says, 'I am happy to say we have at length found the Stag Rock, *and a dangerous one it is.* * * * The rock is about two boats' lengths in diameter, rising to a point so sharp the lead cannot be made to rest upon the highest part; there is 11 feet of water upon it, and 23 feet all round it. It is 1,500 feet from the lighthouse. *I have found some other*

J. R. Ormsby Gore, Esq. to the Lords of the Admiralty. 8 August 1842.

dangerous rocks in this bay, on the east side, and indeed one near the harbour, between the Stag and the Nimrod. There may be others. I should not have found this without sweeping with two boats; and a whole line for my soundings had been carried on all sides of it with the greatest precision, by means of flags erected in a line with distant objects.

"'Besides the Stag Rock, you will find *two other dangerous rocks to the eastward, not in any chart. There are probably others, and all the S.E. part of this bay must be considered dangerous, from the possibility of their existence.*'"

Now the Stag Rock is within about 200 yards of the mouth of the harbour, and as Captain Beechey himself was the official authority to proclaim, in 1838, its dangerous character to all mariners navigating this sea, I have to submit that the Commissioners' case has not been much bettered by this reply. An opportunity was here offered him to mention the Stag Rock and the other rocks referred to, which he had pronounced to be dangerous No such notice, however, is taken of them. On the contrary, further concealment of the real fact in dispute is attempted. The result is, that the petitioners have to complain that the Commissioners did not notice the Skerries Rock; and, secondly, that notwithstanding the broad hint furnished to refresh their memories, they are still silent as to the Stag and "two other dangerous rocks to the eastward," alluded to by Captain Beechey in the extract quoted; particularly as I understand the uniform practice of officers is to notice specifically in their reports all dangerous rocks of the kind: thus the report of Captain Beechey on the communication between the South of Scotland and the North of Ireland, already referred to, contains the following passage: "The only disadvantage this port (Larne) possesses, is that of having a dangerous rock off its entrance, situated between it and the Maidens; this danger may, however, be removed by blasting the rock to a sufficient depth for vessels of the steamer's draught of water to pass over it." Now if Captain Beechey considered it proper to notice in his Report on the harbour of Larne the fact of a dangerous rock being there, he surely should not have omitted to notice in his Report on Holyhead the existence, not of one, but of *many* far more hazardous rocks, which had been discovered by himself but the year before. Had they been found at Port Dynllaen, I am inclined to think that the Commissioners would not have so far favoured *that* harbour as to have passed them over in silence.

And here it is fit that I should remind your Lordships that the Commissioners speak of an *establishment* at Holyhead for six vessels; an establishment, I apprehend, which means no more than accommodation for three vessels on the one, and three on the other side of the Channel, which would be quite inadequate to the wants of the public, should that improved communication take place between London and Dublin for which all parties are anxious. Two consequences would follow from this change, which should not be overlooked: the traffic now scattered and divided between several places would be concentrated into one, and that would be increased in proportion to the improvement effected. These are points which Admiral Gordon and Captain Beechey do not appear to have taken into consideration; but they did not escape the attention of the Irish Railway Commissioners. (Second Report, p. 78.) For such traffic vessels like the Merlin and Medusa would be inadequate. These were experimental, and in consequence of their drawing only 10 feet of water, it has been found that they are thrown back in their passage in rough weather from two to three hours more than vessels drawing 14 feet of water*. Now it is particularly to be remarked, that the Commissioners state that their improved harbour at Holyhead "would suit vessels such as the Merlin and Medusa." The accommodation intended to be given is therefore expressly limited to three such vessels as these. Is it not clear then that any improvement which is to be necessarily bound and restricted by the number and capacity of such vessels must prove a failure and involve a complete waste of money expended upon it.

16. I am not so clearly of opinion as the Commissioners appear to be, that the insecurity of and difficulty of access to the present harbour at Holyhead have nothing to do with the plan for making one in the same place. As to the means and cost of constructing that, I am led to differ widely with them, upon comparing their prices with those of practical engineers. They tell us the harbour will cost 200,000 *l.*, and that the charge for rubble will be 3 *s.* a cubic yard, and 4 *s.* for stone. But I find that the late Mr. Rennie estimated the work for extending the present pier as follows: ashler and rubble 3 *s.* per cubic *foot*, and large rubble at 8 *s.* per cubic yard. Now the difference between yards and feet is as one to 27, or 4 *l.* 1 *s.* per cubic yard, instead of 4 *s.*; so that, if Mr. Rennie's data be adopted (and from his great practice I must assume his superior competence), the cost of constructing an outer-packet harbour at Holyhead, according to the plan of the Commissioners (which, they say, would be inadequate), instead of 200,000 *l.*, would amount to 1,300,000 *l.*; and the cost of extending the present pier, in the way proposed by Captain Beechey (during the sitting of the Committee, and designated by him "*a make-shift port*"), in place of 70,000 *l*, would amount to 300,000 *l.*; whereas the petitioners were prepared to prove that one-half of the latter sum would construct a packet station and a refuge harbour at Port Dynllaen. Adopting, therefore, the recommendation of the Committee, namely, that "the port that should appear to hold out the prospect of the least future outlay ought to be adopted," it is quite clear that, if the Committee had more fully gone into the London and Dublin branch of the inquiry, the evidence in favour of Port Dynllaen would, in this respect, have been decisive, even though its claims to a preference had not been, in every other particular, eminently superior to those of Holyhead. I understand, too, that the petitioners were prepared to show, by the testimony of eminent engineers, who are well acquainted with the works at Holyhead, that Rennie's prices are rather too low than too high for the present day. The task of reconciling a discrepancy so startling I must leave to the Commissioners, contenting myself

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* *See* Commander Denham's Evidence.

J. R. Ormsby Gore, Esq. to the Lords of the Admiralty. 8 August 1842.

myself with the observation, that if the materials for any of the proposed improvements are only to be obtained at the sums paid by Mr. Rennie, they are not likely to be applied to Holyhead Harbour. I doubt whether any Minister would propose, or any Parliament vote, the required amount. As the case is different at Port Dynllaen, I venture to contribute a detail or two.

The stone in the vicinity of Holyhead is of the schist formation, and full of fissures; moreover, it yields to the action of the sea, as may be seen by the numerous caverns which perforate the base of Holyhead mountain; it cannot, therefore, be used for anything except for filling in. Large rubble (exceeding one* ton), ashler, and blocks for masonry, must be sought elsewhere. The nearest points at which stone suited for these purposes can be procured, are the quarries of carboniferous limestone, half way between Puffin Island and Holyhead, and in Red Wharf Bay, or at Pennon, near Beaumaris, of which the Menai Bridge, Penrhyn Castle, and the town-hall at Birmingham, are constructed.

With respect to Port Dynllaen there is at the point called Carreg-y-ham a great mass of syenite and syenitic greenstone, which would stand the battering of the sea as well as the Kingstown granite, perhaps better, from being of a finer grain. It rises in lofty precipices, and could be quarried with great facility, and in blocks of larger dimensions than any which could be required. This may be seen by observing the numerous detached blocks lying at the base of the cliffs, and shown conspicuously on Lieut. Sheringham's map. Another advantage here would accrue: as the intended railway must necessarily pass this point, the stone from the proposed tunnel or open cutting at Carreg-y-ham might be conveyed along the line to the port, distant about two miles, and there form the harbour. The heavy cutting of the railway would thus be turned to a profitable use in the completion of the other undertaking, and the expense of one work would materially lessen that of the other. It seems strange that an officer of Captain Beechey's geological reputation should not at once have perceived that the stone at Holyhead is unfit for the construction of a harbour.

Into all that is here said of Mr. Laurie's publications, and the mercantile testimonials in favour of Holyhead with which the Commissioners have thought it necessary to support their case, I decline to enter. I must leave it to others to decide upon Mr. Laurie's judgment. The petitioners stated a fact with regard to Holyhead Harbour, namely, that it was the only one of which Mr. Laurie had given a map, on account of the danger incurred in approaching it. Now the fact is neither more nor less than was stated by the petitioners; and I must be allowed to add, that a sketch of a maritime place is not a plan of a harbour. I deny that there are any inconsistencies in the petition; but if there were, I should regard some things of the sort as nearly unavoidable in a document which adverted to different plans and echoed the sentiments of subscribers to each of them. One instance quoted by the Commissioners as evidence of inconsistency is the very reverse. The petitioners stated from a Report by Mr. Rogers, that Port Dynllaen was in its present state a safe retreat from *nearly* every point of the compass; and the Commissioners refer to Lieutenant Sheringham's map to show that it is open from N.W. to E.N.E. But what are Lieutenant Sheringham's words? the following: "The heaviest sea brought into Port Dynllaen is by winds from W.N.W. to N.N.W., against the effects of which it is necessary to guard; this, however, would effectually be done by means of the pier and breakwater above alluded to." So that Lieutenant Sheringham has confirmed Mr. Rogers's statement to the effect that Port Dynllaen is safe from *nearly* every point of the compass.

I cannot, however, pass over, without animadversion, and that of the strongest kind, the paragraph with which the Commissioners conclude their replies. They have here the boldness to claim Lieutenant Sheringham as an authority for Holyhead, and they quote what appears a *complete* sentence from that officer's Report as evidence of his *unqualified opinion* in this respect. If the degree of attention due to the labours of the Commissioners is to be estimated by their candour in the use made in this instance of Lieutenant Sheringham and his Report, I have no fear as to the result; for not only is the quotation garbled, but the very document from which it is taken contains the most distinct and positive testimony the other way. What the Commissioners give as Lieutenant Sheringham's words are these: "I doubt whether a more desirable packet station on this side of the Channel could be selected than that of Holyhead."

The original sentence, however, in Lieutenant Sheringham's Report to Captain Beaufort, which the Commissioners garbled to suit their views, is this:—"I have the honour to state, that my opinion as to the merits of that harbour for the steam-packet establishment, *as at present constituted*, and *for the class of vessels at present employed*, is, that it very fairly answers the purpose intended, and that I doubt whether a more desirable packet station on this side of the Channel could be selected."

The opinion thus conveyed will be found more fully confirmed as we proceed with the same Report, to the concluding sentence, viz. "I therefore submit, that Holyhead Harbour is, perhaps, the most eligible situation for the packets *as at present established; but that it does not offer a suitable place for the erection of large and expensive works in order to protect vessels of* INCREASED DRAUGHT OF WATER; *and that for a harbour of refuge it is so situated as to be insufficient.*"

Yet

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* In the account of Plymouth Breakwater given by the Engineers of the Harbour in the Report of the British Association, 1841, it is stated that although "the slope is five to one, and regularly formed with squared blocks of limestone and dovetailed granite from the level of low water spring tides, the force of the sea is so great that stones of 15 and even 20 tons have been taken from low water and carried over the top." Now, according to Commander Sheringham's Report, the sea at Holyhead is equally strong.

J. R. Ormsby Gore, Esq. to the Lords of the Admiralty.
8 August 1842.

Yet this is the gentleman and this the document on which the Commissioners rely as evidence in favour of the superior fitness of Holyhead for the purposes they recommend.

While adverting to Lieutenant Sheringham, I cannot refrain from noticing another instance of unfair use made of his Report. The Commissioners, wishing to convey an idea that there was not much room to be obtained at Port Dynllaen, have on the last page of the Replies this passage: "A third states, that if a breakwater were erected, 'space might be found for 10 vessels, drawing from 15 to 16 feet water, if placed by a judicious harbour-master.'" Now, this is an extract from Lieutenant Sheringham's Report, but it is garbled. That officer spoke of *large* vessels, a word the Commissioners suppress. Lieutenant Sheringham, moreover, did not confine his ideas of the accommodation to be obtained in Port Dynllaen to these 10 large vessels. He proposed "to place at the west side of the Bay *eight large steamers*, and in the other parts *ten large vessels, besides the smaller ones, which form the ordinary class of coasters*." To this we should add, that Lieutenant Sheringham also stated that "the harbour at Port Dynllaen would contain an area of about 110 or 115 acres, throughout the whole of which the least water would be two fathoms at low water," which would be more than four times larger than the harbour recommended by the Commissioners at Holyhead. Such are Lieutenant Sheringham's full views of Port Dynllaen; but as it did not suit the Commissioners to present them to your Lordships, they have suppressed the greater part of them, and mutilated the only passages they have ventured to quote.

In fine, I cannot but add, that I am fully persuaded that further inquiry, if conducted by persons desirous only of obtaining the best line of communication between London and Dublin, will not only confirm the opinion given by Captain Beaufort in his Report of 14th November 1836, to the effect that "Menai Bridge is unfit for railway carriages; that the most prevalent winds would be advantageous to steamers between Port Dynllaen and Kingstown; and that the former port is easily capable of being made into a pier harbour for steam-packets,"* but will in every other respect establish the case of the petitioners.

I beg to apologise to your Lordships for the length to which I have extended these remarks, and to remain

Your very, &c.
(signed) *John Ralph Ormsby Gore.*

Appendix (A.)

EXTRACTS † from Mr. *Provis*'s Account of the *Menai Bridge*.

1818. 1. "Equal exertions had been made at the quarries beyond Penmore Point, but not with equal success; for the pier which had been commenced, and was intended as a protection for the stone vessels when taking in their cargoes, had been much injured by repeated storms, and was consequently but little advanced."—p. 21.

2. "The pier, however, has advanced but slowly, for a succession of storms had attacked it, and frequently knocked down in an hour what it had taken a week to build; it became, indeed, a question whether any complete protecting pier could be constructed without going to such an expense that the object in view would not justify; an endeavour was then made to secure the quay, 40 yards in length, and the pier of 70 yards in length, that had been constructed, instead of attempting any further extension."—p. 22.

1819. 3. "In 1819 several vessels, besides those belonging to the Commissioners, had been engaged to bring stones from the quarries, and about 1,000 tons (!) had been delivered, and were ready for setting."—p. 24.

1820. 4. "In consequence of the difficulties experienced in getting stones from without the Sound during the tempests which closed the year (February 17th, 1820), nearly all the hired vessels quitted the work, and it was found necessary to open some new quarries on Lord Bulkley's property, from whence stones were carted down about a mile, and shipped within the Bay; the dressed stones at the outer quarries were a good deal injured by repeated storms, and it was found impossible to get them away without the risk of losing the vessels."—p. 26.

5. "Some

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* The objection made by the petitioners to the Report of the Railway Commissioners, in reference to Menai Bridge, has since been remarkably confirmed by a paper, entitled "Observations of the Effects of Wind produced on the Menai Bridge," by W. A. Provis, C.E., published in the Transactions of the Institution of Civil Engineers for the year 1842. After reading the account there given of the various accidents which from time to time have occurred to the bridge, and the effects of the wind upon it, no one, I should think, would venture to pass over it in a railway carriage during rough weather. I subjoin (*see* Appendix C) a few extracts from Mr. Provis's paper for your Lordship's information, and beg further to point out to you that General Pasley has also written a very interesting tract on the effects of wind on suspension bridges, which strongly corroborates the views entertained by the petitioners. The General considers that all suspension bridges which are not perfectly inflexible to the wind must, sooner or later, be swept away; and further says, "I am of opinion that the roadway of every suspension bridge having only light side railings, such as those at Montrose, Aberdeen, &c. and, indeed, of all that I have seen, excepting that of Hammersmith, will, sooner or later, be carried away by some future hurricane, provided it shall approach to or exceed 400 feet in length between the points of support."—*Transacts. Instit. Civil Engineers*, vol. iii. part 3, p. 227.

† The interesting work from which these extracts are taken may be seen in the library of the Institution of Civil Engineers, Great George-street.

5. "Some other vessels having been engaged to bring stones from the outer quarries, and the weather having moderated, enabled the contractor to keep up the stock of stone at the bridge."—p. 27.

6. "On the 24th April a heavy sea carried away part of the Lychnant quarry pier, and damaged the crane; this had no sooner been repaired than the 'Swansea,' during a severe gale of wind, was driven on the reef of rocks which stretch into the Sound from Puffin Island."—p. 27. 24th April.

7. "These unseasonable storms began to affect the work at the bridge, for having a considerable increase of masons, the stock of dressed stone was much diminished, and the rate of progress, from not being able to complete the courses, was consequently much retarded."—p. 27.

8. "In the beginning of *June* there were 300 men at work, and though there were ten vessels in employ, not one of them durst venture to take a cargo of stones on board for nearly a fortnight."—p. 28.

9. "On the 6th October, the abutment on the Anglesey side was founded, and from that period to the end of the year the whole advanced with as much rapidity as was practicable under the difficulties that were to be contended with. Repeated storms rendered it impossible to procure regularly a sufficient supply of stones. The 'Villias' had her bottom stove in by beating on the rocks at the outer quarries; the 'Winsford' had been seriously injured at the same place, and was only saved by scuttling her; ten other vessels had been damaged, and more than half of them had quitted the employ rather than be exposed to such frequent and serious risks."—p. 28. 6th October.

10. 8th January 1821.—"Notwithstanding every exertion, stones could not be got from the quarries fast enough for the builders; disasters were continually happening to the vessels, which made the owners very shy in allowing them to work." 1821.

11. "The Commissioners' vessels were almost worn out by hard service, and a hired one, the Alice Ann, was much injured, and obliged to be scuttled at Lychnant quarry, by a gale coming on when she was loading."—p. 29.

12. "At the end of the year the work was delayed, as usual, by unfavourable weather."—p. 30.

13. "On the 10th of May a serious disaster occurred at the outer quarries. The Commissioners' vessel, the Sally, and a hired one, the Alice Ann, had gone there for cargoes; but before they could clear out, a storm of wind came on, which, during the night, made complete wrecks of them both."

14. 1822.—"The Winsford, a vessel that had been employed, and had hitherto been very successful in bringing stones from the quarries to the bridge, was wrecked on the 5th December, during a gale of wind. Distressing as these occurrences always were to the owners, and harassing as they had been to those engaged in forwarding the works, it was some consolation to know that the great mass of masonry was now completed, and the quantity of stone that would be required materially diminished."—p. 40. 1822.

15. "It is true plenty of rock from Conway Bridge embankment may be had within a shorter distance than the earth, and rock would have been a very proper material, but the great expense of quarrying it, of running it by railways to the shipping quays, and then loading and unloading it at the site of the embankment, would have been very great; besides, all that would have been required for the upper part of the embankment must have been raised to a height considerably above the vessels, which would have added still more to the expense; and as none but small vessels could be floated to the greater part of the embankment, and even those only at high-water, the construction by such means must have been very tedious."—p. 81.

N. B.—Mr. Rennie, in his estimate for enlarging Holyhead, has allowed 20 per cent. for "contingencies;" but it is clear that he would not have considered 100 per cent. too much, had he then had the benefit of his subsequent experience at the Menai Bridge to direct him. And it is also reasonable to conclude that he would not, under such circumstances, have considered 20 years too little to allow for completing the proposed works at Holyhead.

Appendix (B.)

My Lord, Dublin, 17 June 1842.

Perceiving that you are the Chairman of a Committee now sitting in the House of Commons upon the subject of an improved Post-office communication between London and Dublin, I beg leave, being one of the honorary secretaries to a public meeting held here upon the subject, to direct your attention to some points which I conceive to be of the first consequence in connexion with the question at issue.

In the first place, I would advert to the necessity of providing sufficient accommodation in the harbour for the increased number of vessels which its selection cannot fail of bringing to it. That increased traffic will flow from adequate improvement, experience leaves no room to doubt; and also that the great majority, if not all, of the passenger steamers to and from Ireland, will make for the harbour which shall give, as is intended, the shortest possible communication, not only between London and Dublin, but also between most of the other large towns in England and Ireland. The Irish Railway Commissioners, adverting to this point, at page 78 of their Second Report, say, "The passenger traffic must be very considerable, comprising, as the line will, that for the whole of Ireland, or nearly so; and increased,

J. R. Ormsby Gore, Esq. to the Lords of the Admiralty. 8 August 1842.

increased, in a great degree, by the more rapid and cheaper medium of intercourse." I submit that this is the proper time to make due provision for such increase.

2. It is most desirable that those considerations should be duly weighed upon the present occasion which have been principally dwelt upon by the parties most interested, upon public grounds, in the measure in question, namely, that the capabilities of Holyhead and Port Dynllaen, not as packet stations only, but as harbours of refuge also, should be well ascertained by a survey conducted by perfectly disinterested as well as competent persons; and that in the event of the two places being found equal, or nearly so, in the former respect, the preference should be given to that having the greater capacity for the latter purpose. The serious losses sustained upon the Welsh coast every year, in consequence of the want of a harbour of refuge, have been so fully set forth on various occasions, that I conceive a general reference to them here will be enough to convince you that I do not venture to solicit your attention to this point without having good reason and divers facts to sustain this view of the case.

3. It is reported that an inner harbour has been suggested. If that be the case, I beg to submit, that when sailing vessels were in use, this mode of increasing the accommodation at Holyhead was considered and condemned by the late Mr. Rennie, Sir John Stanley, and the other Commissioners* of Holyhead Harbour. I need hardly occupy your time to prove that the accommodation which these authorities regarded as inadequate for sailing vessels in 1816, will not prove sufficient for large-sized steamers at the present day.

The following passage from Appendix (B.), page 178, of the Report from the Committee on Holyhead Harbour, 1816, contains Mr. Rennie's sentiments; to which I beg to add, that the proposed extension of 40 yards has been effected:—

"It has been suggested that additional space could be obtained in the least expensive and most effectual manner by an extension of the pier to the eastward. Now, on examination, this will be found not only to be very expensive, but by no means effectual, for it unluckily happens that at the distance of about 700 feet beyond the projected termination of the present pier, there lies a large cluster of sunken rocks, called the Pibeo Rocks, which extend nearly 200 yards beyond low-water mark, and come within about 150 yards of the line which an extended pier would take. It would therefore be absolutely necessary, if space was to be gained by an extension of the pier, that it should be carried at least 250 yards beyond the present intended termination, and this alone would cost at least 100,000*l.*; and when done, would not produce all the space that would be wanted, while it would extend the length of the lee shore within the pier, and, after all, the large vessels would still lie as near the pier head as they could, and obstruct the entrance; so that even were this large sum of money to be expended, the obstructions would only be partially removed.

"It, therefore, seems to me quite unadvisable to attempt gaining sufficient room in the harbour, by any material extension of the pier. I am, however, of opinion, that if it were to be extended about 40 yards, it would be beneficial, because by *such* an extension *some* additional depth of water would be gained; and it would not occasion any obstruction to the entrance of the rocks of Carreg Modlan."

4. Mr. Rennie's views have been corroborated by Lieutenant Sheringham, who, in his official Report, addressed to the Admiralty, March 14, 1838, says, with reference to this method of improvement, "By extending the present pier, the entrance to the harbour would be thrown too far to the eastward, and too near the rocks on that side of the bay; and it is doubtful whether the deeper water thus obtained, could be long preserved, as the very large quantity of silt which fills the inner harbour would probably accompany the extension of the pier head."

5. I would also beg attention to the opinions of Mr. Stephenson and Mr. Cubitt. Mr. Stephenson, at a public meeting held upon this subject in Chester, in January 1839, expressed himself thus: "All that is wanting at Holyhead is an *outer* pier, which would give *twenty-two feet of water* at low water." This eminent engineer, therefore, is satisfied that no improvement of the *inner* harbour will answer the wants of the present period.

Mr. Cubitt, addressing the Irish Railway Commissioners (*see* their Second Report, Appendix (A.) p. 87), expresses himself in the following terms: "We now come to the consideration of the harbour, *which, in my judgment, is the most important consideration of the two*, inasmuch as it involves, according to its plan and construction, not only the question of a mere cover and landing-wharf for goods and passengers, at the termination of the proposed railway, but also that of a harbour of refuge on a most dangerous part of the coast, where a shelter of that kind is a desideratum.

"Now, the term harbour is so indefinite, that, by proportioning the size to the means, a harbour may be constructed for almost any sum of money, according to its depth, extent, &c.; and, in a case like this, *where deep water is required* at low water, and a capability of vessels, steam-packets, and others *drawing from fifteen to eighteen feet*, lying afloat at all times, and sheltered with any wind, the expenditure must necessarily be considerable."

I have ventured to refer to these different authorities, because I feel that nothing would be more to be regretted than an attempt, at the present moment, to patch up existing defects, or to diminish them, by spending money on half measures. The circumstances of the two countries,

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* The words of the Commissioners are, "He" (Mr. Rennie) "proposes extending the pier to a distance of 40 yards, which is as far as the safety of the port will admit."

J. R. Ormsby Gore Esq. to the Lords of the Admiralty.
8 August 1842.

countries require enlarged and liberal improvements, such as will endure for a lengthened period, and meet the wants of the different interests concerned. I trust that a comprehensive plan, fully equal to the occasion, will follow from the inquiry which is now going on under your Lordship's auspices.

I have, &c.
(signed) *James Perry.*

Lord Ingestre, M. P.
&c. &c. &c.

Appendix (C).

First injury by wind.

Though the parapet railing and some unimportant parts had not been then completed, the bridge was opened to the public on the 30th of January 1826. On the 6th February following there was a heavy gale, which blew some of the yet unfixed parapet into the Strait, and caused so much motion in the chains and roadways as to break several of the vertical suspending rods, and many of the iron bearers or joists which supported the platform of the roadways.

Construction of bearers.

The bearers or joists were composed of four horizontal bars, two of them 12 feet long, and the other two 16 feet long each. The bridge being 28 feet wide, a bar of 12 feet long, with one of 16 feet, made up the total width; and these two being connected with the other two similar bars, having that of 12 feet long placed alongside that previously laid of 16 feet, and the second 16 feet bar alongside the first of 12 feet, the two longer bars thereby overlapped each other four feet (or the width of the footpath) in the middle of the bridge. The eyes at the lower ends of the four vertical suspending rods, which ranged in the transverse direction of the bridge, at the respective distances of 12, 4, and 12 feet from each other, were passed between the two pairs of horizontal bars, and bolted through them. Beneath each of the 12 feet lengths a tie-rod with a king-post was introduced, to prevent the bars from bending between their points of suspension. All these were screwed together, so as to become in effect one nearly inflexible joist, suspended at four different points of its length.

Undulation.

The motion which had been anticipated was that of simple undulation, flowing in waves at right angles to the length of the bridge; and had this been the only motion, the bearers, it is apprehended, would not have been injured by the gale. They would have been equally raised or depressed throughout their lengths as the wave rolled forward, and been subjected to no strain which they were not fully competent to resist.

The movement of this undulatory wave, however, was oblique with the lines of the bearers and their suspending rods, as well as with the general direction of the bridge. In other words, when the summit of the wave was at a given point on the windward side of the bridge, it was not opposite this point on the leeward side, but, in relation to the flow of the wave, considerably behind it; the motion appearing to be generated on the windward side, and by the time it had crossed to the leeward it had also moved forward along that on which it had commenced.

Consequences of undulation.

The tendency of this undulation was to bend every bearer into a form produced by the oblique intersection of a vertical plane with the surface of the moving wave, and this form necessarily varied with every change in the position of the wave.

To this cause must be attributed the failure of those bearers which were broken by the gale. They had been constructed for the purpose of resisting the species of strain to which it was expected they would be exposed; but they were deficient in strength where that strain was greatest. They were uniformly fractured at the eyes of the 16 feet bars where they were suspended from the rods on each side of the footpath, and at those parts of the bridge which were about midway between its centre and the supporting pyramids.

Amount of motion.

The motion was observed to be greatest about halfway between the pyramids and the centre of the bridge. The wave increased in its progress from the pyramid till it attained its maximum altitude near the first quarter, and at the same instant the extreme depression was near the third quarter. The wave then gradually diminished to the centre of the bridge, and afterwards increased to the third quarter, when it attained its greatest height at the same time that the first quarter was most depressed. The platform and the main chains were equally subjected to this undulatory motion: the latter also oscillated slightly.

Cause of the failure of suspending rods.

The planks forming the roadways were bolted to the bearers, and notched to fit closely around the lower ends of the vertical suspending rods, which were thereby held almost immoveably in the platform.

During the undulations to which the bridge was exposed, the surface of the roadway continually changed its position relatively to the lines of the suspending rods; the latter preserving their tendency to hang vertically as when in a state of rest, whilst the platform changed its relative angle with every variation of the moving wave. This bent the suspending rods backwards and forwards at the parts where they were held fast at the surface of the roadways, and there, in many instances, wrenched them asunder.

Storm of 1836.

On the 23d January 1836 (10 years after the bridge was first opened to the public), an unusually severe gale of wind from the W. S. W. caused the chains and platform to undulate violently,

violently, and broke some of the roadway bearers, with six of the suspending rods. There can be no doubt that 10 years' continued friction, combined with the ordinary shrinking of the timber, had considerably affected the original rigidity of the platform, so that during the gale last referred to there was a greater degree of irregular undulation than had previously been observed. It is not easy to define correctly the amount of rise and fall of the roadways; but Henry Fisher, the bridge-keeper, who assisted as a carpenter in the original construction, had lived ever since at the Anglesea end of the bridge, and watched every storm by which it had been assailed, stated that there was little less than 16 feet between the extreme of rise and the lowest point of depression.

Oscillation of the chains.

There was also considerable oscillation of the main chains between the pyramids and the centre of the bridge; not to an extent that could have produced a great proportion of the observed rise and fall of the roadways, though there is no doubt that it was one of the aiding causes.

Platform not fixed at the ends.

The extremities of the suspended part of the platform were not attached to the two pyramids, but rested upon the masonry, the wheel-guides and part of the planking being constructed so as to slide under the arches of the carriage-ways, in order to prevent the platform being easily blown out of its place. The gale of January 23, however, broke the wheel-guides and planks at the Anglesea pyramid, and forced that end of the platform sideways about 15 inches from its true position. By cutting away the ends of the planks which were jammed against the masonry of the pyramid, and then applying some powerful hauling tackle, the platform was restored to its proper situation.

Storm of January 1839.

The storm, according to the account of those who observed it at the bridge, commenced on the evening of the 6th with a strong but unsteady wind, veering a few points on both sides of S.W. The gale increased during the night so much, that between two and four o'clock of the following morning it became a hurricane, and all approach to the suspended part of the bridge was impracticable. The fury of the storm having somewhat abated after four o'clock a.m., the bridge-keeper made an attempt to examine the chains and roadways. It was with difficulty he could make his way to the platform, and it was only by watching the lulls of the wind and holding fast by the ironwork that he was enabled to reach the suspended part of the bridge.

Effects of the storm.

When daylight arrived, the general injury was evident; both carriage-ways had been partially destroyed, and were rendered impassable; the footpath between the carriage-ways, however, was but slightly injured, and the bridge could still be traversed on this central line.

The weather continued too tempestuous to admit of men working on the bridge, and the day was spent in making preparations for a temporary repair of the carriage-ways as soon as the wind should subside.

Details of the injuries.

The plan and elevation given in Plate XVI. explain the nature of the injuries sustained by the bridge; they exhibit, as well as the small scale of the drawings will permit, the several fractures of the roadways, and the general appearance of the suspended part immediately after the storm. The elevation is represented as it would appear to a person looking to the north-east, or towards Beaumaris.

The condition of the two carriage-ways was as follows:—

1st, the north-east carriage-way:

a to *b*, length 80 feet.—Very slightly injured.

b to *c*, length 55 feet.—One-half of the outer suspending rods broken.

c to *d*, length 15 feet.—The suspending rods on both sides torn asunder; the roadway broken through at the line *d*, and the end of the platform at *e* hanging down about six feet.

d to *f*, length 175 feet.—The whole of the suspending rods on the inner side broken, and with the exception of six rods near the north-west end, and seven rods near the south-east end, all those on the outer side were also broken, the timber platform hanging down suspended by the rods at its two corners.

f to *g*, length 85 feet.—All the suspending rods on the outer side broken; on the inner side all broken except four, near the north-west end, the north corner of the platform hanging perpendicularly down.

g to *h*, length 55 feet.—All the suspending rods on the inner side broken, and the outer side suspended only by 4 rods.

h to *i*, length 85 feet.—Not injured.

2dly. the south-west carriage-way:

k to *l*, length 123 feet.—Not damaged.

l to *m*, length 40 feet.—All the outer suspending rods broken, the platform broken across at *m*, and the corner *n* hanging down about 6 feet.

m to *o*, length 267 feet.—Scarcely injured.

o to *p*, length 30 feet.—All the outer suspending rods broken, and the timber platform at that edge sunk about 6 inches in the middle of its length.

p to *q*, length 80 feet.—Not injured.

Number of rods broken.

From the foregoing statement it appears that out of a total number of 444 suspending rods rather more than one-third had been torn asunder, that the timber-work of the south-west carriage-way had been broken through transversely at one place, and that of the north-east carriage-

carriage-way in two places; and that of the latter there was one connected piece of 175 feet in length and 12 feet in width hanging down and swinging in the air.

Iron joists broken.

In those parts where the suspending rods had been torn asunder and the platform broken down, the iron joists or bearers had also failed, and much of the parapet railing had been blown into the Strait.

The ties, &c. destroyed.

The ties and tubes before described, by which the main chains were kept in parallel planes, were destroyed.

Movement of the platform.

It was also evident, from distinct marks on the masonry of the Anglesea pyramid, that after the fracture of the wheel guides, &c., which passed under the roadway arches, the platform had oscillated considerably in its transverse direction, the marks extending at least three feet on the leeward side of the platform.

LONDON AND DUBLIN COMMUNICATION

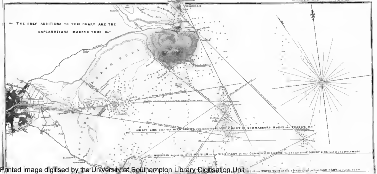
COPY of a LETTER addressed to the Lords of the Admiralty by *J. R. Ormsby Gore*, Esq upon the subject of a Paper appended to the REPORT of the Select Committee on POST-OFFICE COMMUNICATION, Sess. 1842.

(*Mr. W. Ormsby Gore.*)

Ordered, by The House of Commons, to be Printed,
10 *August* 1842.

552.

Under 3 oz.


☞ THE ONLY ADDITIONS TO THIS CHART ARE THE EXPLANATIONS MARKED THUS ☜
DIRECT LINE FROM THE HIGH LIGHT ... CHART OF COMMANDERS MUDGE AND FRAZER RN
WHEREAS ... POSITION OF THE HIGH LIGHT ... DIRECT LINE ... HOLYHEAD
... WHITE BUOY ... KISH BANK ...
NORTH BULL
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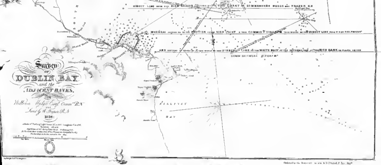
Survey
of
DUBLIN BAY
and the
ADJACENT BANKS
by
William Mudge Esqr. Comr. R.N.
and
Lieut. G. A. Frazer R.N.
1826
DIRECT LINE FROM THE HIGH LIGHT ... CHART OF COMMANDERS MUDGE AND FRAZER R.N.
WHEREAS ... THE POSITION OF THE KISH LIGHT & THE COMMISSRS. DIAGRAM ... DIRECT LINE ... HOLYHEAD
AND INSTEAD ... DIRECT LINE TO THE WHITE BUOY AT THE EXTREME END OF THE KISH BANK AS PLACED ON THE COMMISSIONERS DIAGRAM
BLACK ROCK
DALKEY
KILLINEY
BAY
NORTH